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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,732	09/09/2003	Robert Daniel McCarthy	90481	2793

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EXAMINER

DINH, TRINH VO

ART UNIT	PAPER NUMBER
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2821

DATE MAILED: 12/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/658,732

Applicant(s)

MCCARTHY ET AL.

Examiner

Trinh Vo Dinh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 13-21 is/are rejected.
- 7) ☒ Claim(s) 11 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/03/03</u> . | 6) <input type="checkbox"/> Other: _____ |

ETAILED ACTION***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, "a substrate which carries the radiating elements on a first side and the ground plane on a second side" in claim 10 must be shown. No new matter should be entered.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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3. Claims 1-10, 13-18 and 20-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Nishino et al (USP 6,421,026 B2).

With respect to claims 1, 9 and 13-14, Nishino discloses, in Figs. 4-6, an antenna including a microstrip network (4), four or more helical radiating elements (1a-1d), and four or more impedance matching elements (3a-3d) each coupling a respective radiating element to ground in parallel with the feed network (col. 5, lines 15-25) and the antenna is configured to transmit and/or receive circularly polarized radiation.

With respect to claims 2-4, Nishino discloses each impedance matching elements (3a-3d) being a stub coupled to ground via a conductive short circuit connection (Fig. 4, col. 4, lines 48-57) and each impedance matching elements (3a-3d) being an inductive element, and the antenna is configured to transmit and/or receive circularly polarized radiation.

With respect to claims 5-6, Nishino discloses, in Figs. 4-6, the antenna being a quadrifilar antenna having four radiating element (1a-1d) and having four feed lines each connected to a respective radiating element at a respective junction, wherein each impedance matching element is connected at a connection point located at or adjacent to the junction.

With respect to claims 7-8, Nishino discloses, in Figs. 4-6, the connecting point being located on the radiating element (3a-3d) adjacent to the junction, or being located on the feed line adjacent to the junction.

With respect to claim, 10, Nishino discloses a substrate (10), which carries the radiating elements on a first side and the ground plane on a second side (Figs. 4-6, col. 4, lines 48-57).

With respect to claims 15-18, Nishino discloses, in Figs. 4 and 6, the feed network (4, 8) including a 180° hybrid coupler (4, 8) having no terminated port and the feed network includes a 180° hybrid coupler having a feed port, a 0° port; a 180° port having an approximately 180° phase

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difference with the 0° port; a first antenna port coupled to the 0° port; a second antenna port coupled to the 0° port via a respective phased line, the second antenna port having an approximately 90° phase difference with the first antenna port; a third antenna port coupled to the 180° port; and a fourth antenna port coupled to the 180° port via a respective phased line, the fourth antenna port having an approximately 90° phase difference with the third antenna port (col. 5, lines 28+, or col. 6, lines 48+).

With respect to claims 20-21, Nishino discloses, in Figs. 5-6, the radiating elements (1a-1d in Figs. 5-6) each having substantially the same length and coupled to the feed network (4, 8) at one end, and open circuited at another end.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable of Nishino in view of Connolly et al (USP 5,541,617).

Iwasaki discloses every feature of the claimed invention except output impedance between 45 and 55 ohms. Connolly discloses a feed network (42) having an impedance line of 50 Ohms (44 in Fig. 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Nishino's feed network with an output impedance as taught by Connolly in order to achieve required impedance of the antenna.

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Allowed Subject Matters

6. Claims 11-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: The cited art of record fails to teach the antenna having the substrate carries the impedance matching element on the second side or each impedance matching element including a plated-through hole passing through the substrate.

Inquiry

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trinh Vo Dinh whose telephone number is (571) 272-1821. The examiner can normally be reached on Monday to Friday from 9:30AM to 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong, can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Trinh Vo Dinh

December 13, 2004

